ABSTRACT OF THE DISCLOSURE

After an underlying layer, made of a single crystal metal material, has been formed on a semiconductor layer, part or all of the underlying layer is changed into a metal oxide layer by supplying oxygen thereto from above the underlying layer. Then, a ferroelectric or high-dielectric-constant film is further formed on the metal oxide layer. Since the film made of a metal material is formed on the semiconductor layer, a silicon dioxide film or the like is not formed easily. Thus, a dielectric film, which includes an underlying layer with a high dielectric constant and has a large capacitance per unit area, can be obtained. Various defects such as interface states in the semiconductor layer can also be reduced advantageously if these process steps are performed after a thermal oxide film has been formed on the semiconductor layer.